



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PATENT APPLICATION OF: WILLIAMS, Allan
SERIAL NO: 09/871,910 GROUP ART UNIT: 2176
FILING DATE: 06/04/2001 EXAMINER: Nathan Hillery
SUBJECT: METHOD AND SYSTEM FOR GENERATING A VALUE
ENHANCED DERIVATIVE DOCUMENT FROM A PATENT
DOCUMENT

Confirmation No: 2026

COMMISSIONER FOR PATENTS
WASHINGTON, D.C., 20231, U.S.A.

October 02, 2006

Before the Board of Patent Appeals and Interferences

AMENDED Appeal Brief

Sir:

In response to the Notification of Non-Compliant Appeal Brief mailed July 06, 2006, the applicant submits herewith an Amended Appeal Brief in triplicate in connection with this application, in which all the deficiencies identified by the examiner have been corrected.

A petition for 2 months extension of time is enclosed herewith along with prescribed fees.

Yours truly,

Dr. Allan Williams

By

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Amended October 02, 2006
(originally filed April 21, 2006)

Before the Board of Patent Appeals and Interferences

Appeal Brief (as amended)

I. Real Party in Interest and General Statement

The real party in interest is Dr. Allan Williams and Dr. Victoria Donnelly, inventors and owners of this application.

This is an appeal from the decision of the Primary Examiner, in a Final action dated December 01, 2005 and in Advisory action dated March 10, 2006, finally rejecting claims 1, 2, 5, 7-16, 19, 21-27, 37-40, 43, 46, 47 and 51-56 of this application.

II. Related Appeals and Interferences

None

III. Status of Claims

The status of the claims of this application is as follows:

Claims 1, 2, 5, 7-16, 19, 21-27, 37-40, 43, 46, 47 and 51-56 -- Rejected -- Appealed herein.

A copy of claims 1, 2, 5, 7-16, 19, 21-27, 37-40, 43, 46, 47 and 51-56 in this appeal is contained in the Appendix.

IV. Status of Amendments

In response to the final action filed February 28, 2006, amendments in claims 54 and 56 were requested, and claims 12, 24, 46 and 47 were requested to be canceled.

The Advisory Action dated March 10, 2006 stated that these amendments would not be entered on the filing of this appeal.

Accordingly, the copy of claims in the Appendix does not incorporate these requested amendments.

V. Summary of claimed subject matter

Background information

Many patent documents, especially in high-tech area, are overloaded with information, approaching in size and complexity to books. Claim section alone may contain hundreds of claims, many claims having several hundred words where each word counts. Just to get acquainted with them, let alone to comprehend, would require significant time and effort even for highly skilled professionals in the field.

To remedy this situation, computers have been used to assist users in analyzing claim section of a patent document and representing the results graphically. In view of the rapid growth of the number of patents available for viewing, the need exists in industry to reduce the time of computer processing of claim section of a patent document. In addition, it is also important to allow a user to interactively explore the results of such analysis, which, in turn, translates into simplicity and efficiency of the method used for processing of the claim section.

General Description of the Invention

The present invention relates to an improved system and method for generating a derivative value enhanced document from a patent document, including:

- simple and efficient computer processing of a claim section of a patent document;
- converting the processed claim section into the graphical and textual form; and
- simultaneous displaying of the converted claim section or any subset thereof in both forms and in an interactive manner.

Accordingly, the simple and efficient computer processing of a claim section, corresponding to the first statement shown above, has been addressed by independent claims 1, 15, 25 and 51, including unique processing steps (ii) and (iii) of claim 1 of the method of the present invention (or corresponding means of claim 25 of the system of the present invention).

The steps of the method for generating a derivative value enhanced document from a patent document according to the embodiment of the present invention are explained in more detail below.

As explained in the specification at page 17, lines 28-33 and page 18, lines 1-26, paragraph [0049], processing of claim section of the patent document comprises transforming multiple dependent claims into single dependent claims. To simplify further processing of the transformed claims, each claim is represented by a pair of numbers, the first number in the pair being the claim number, and the second number in the pair being the claim number to which said claim refers. Thus, all claims in the claims section of the patent document are represented by a list of pairs of numbers (see page 19, lines 1-14, paragraph [0052]).

This list is partially structured to satisfy certain patent rules, namely, claim numbers must be arranged sequentially starting from claim 1, and there must be no forward referencing. However, there are no requirements imposed on the arrangement of claim numbers to which the claims refer. They can be arranged arbitrarily depending on claims complexity, the logic behind the claims design, and just plain chance. As explained in paragraph [0053] at page 19, lines 15-28,

such arbitrary arrangement does not allow representing claim structure graphically in a way beneficial to a user, since closely related claims can be represented by pairs in the list of pairs that are situated far apart from each other, separated by other pairs. However, for claims to be easy comprehended, dependent claims should be placed as close as possible to the claims they refer to. In more precise terms, no two pairs (P_1, Q_1) and (P_2, Q_2) such that $P_1=Q_2$ (conjugated pairs) should be separated by other pairs (a proper arrangement).

As discussed in paragraph [0054], page 19, lines 29-31 and page 20, lines 1-13, the Applicant invented a two-step processing of the list of pairs that brings said list into the proper arrangement. The list of pairs is first sorted by the second number in the pair (i.e. the referred claim number) and afterwards, positions of certain eligible neighboring pairs are interchanged. The pairs eligible for said interchanging of positions, the preceding claim and the succeeding claim, represent dependent claims referring to different claims, and succeeding pair does not represent the claim referring to the claim represented by the preceding pair.

The step of sorting brings the list of pairs, which originally has been arbitrarily arranged by claim numbers to which the claims refer, into an unified arrangement required for the second stage of interchanging. Since forward referencing is not allowed, it is important to preserve the order in which conjugated pairs appear in the original list of pairs. Generally, sorting works by changing the order of pairs, and therefore it is not immediately clear whether the order in which conjugated pairs appear in the original list of pairs is preserved. To guarantee this, the Applicant proved the corresponding theorem (see paragraphs [0056] and [0057], at page 20, lines 14-33 and page 21, lines 1-6).

The step of interchanging brings conjugated pairs together by removing any claims that separate them in the list (see page 19, lines 15-31 and page 20, lines 1-13).

It is important to note that both steps of the above discussed processing (i.e. sorting and interchanging) are required for the invention, because only their combination provides for the intended functionality. For example, the absence of the step of interchanging results in the failure to guarantee that dependent claims are not separated by other claims from the claims they refer

to, which, in turn, does not allow representing the claim structure graphically in a way beneficial to a user.

As discussed on page 21, lines 7-24, paragraphs [0058] - [0059], further processing of the list of pairs includes generation of a one-dimensional list of numbers, all of them being initially equal to zero. The list of pairs is scanned, and for each pair (P_k, Q_k) , where k is the current pair number, the following transformations of the one-dimensional list are performed:

- find R_n -th element, where $n=P_k$
- find R_m -th element, where $m=Q_k$
- set R_n -th element equal to the sum of R_m -th element and a pre-determined offset DX .

When the list of pairs is exhausted, it is processed once again, substituting every pair (P_k, Q_k) by a triplet $(P_k, (k-1)*DY, R_k)$, the components of the triplet being "claim number", "vertical offset" and "horizontal offset" respectively, and DY being a pre-determined offset. Generation of the list of triplets concludes the preparation of claim dependency information for conversion into a graphical format. To actually perform said conversion, graphical elements representing claims, e.g. a small picture with the corresponding claim number, are displayed in the position determined by the horizontal and vertical offset of each triplet. This guarantees not only a short processing time, but also a limited space occupied by claim dependency on a computer screen.

To combine graphical representation of the claim structure with the text of the corresponding claims, a fourth component is added to triplets, the component being text of the claim whose sequential number is defined by the first element of the triplet. As a result, the list of quadruplets is generated, the components of the quadruplet being "claim number", "vertical offset", "horizontal offset", "claim text". This is discussed in the specification on page 21, lines 28-33 and page 22, lines 1-3, paragraph [0061].

As explained on page 22, lines 4-24, paragraph [0062], now both portions of information are prepared for combining into the derivative claim section of the patent document as illustrated in Figure 1 (module 26). The derivative claim section is further associated with a computer program code providing a user interactive selection of a subset of elements in one of the

graphical and textual forms, and displaying said subset in the selected form along with the related subset of elements according to the transformed claim dependency in the other form to a user, the elements in the graphical form being displayed in the order obtained after the step (iii) of interchanging (see page 22 paragraph [0064], page 24 paragraph [0067], page 25 paragraphs [0069] and [0070]).

Brief Description of each independent claim and dependent claims argued separately invovled in the Appeal

Claim 1 recites a method of computerized generation of a derivative value enhanced document from a patent document. The method is based on selecting a claim section of the patent document (Fig. 1, segment retrieval module 14; page 15, lines 23-28), processing the claim section of the patent document, comprising transforming multiple dependent claims into single dependent claims (Fig. 2, box 118; page 17, lines 28-31), sorting the transformed claims by claim numbers to which the claims refer (page 19, line 31), and interchanging positions of any two neighboring sorted claims according to the eligibility criteria for said interchanging of positions (page 20, lines 1-13). The steps of sorting and interchanging are based on the theorem proven by the Applicant (see paragraphs [0056] and [0057], page 20, lines 14-33 and page 21, lines 1-6) and provide claim arrangement that is required for a beneficial viewing of claims (please see a detailed discussion above in the sub-section "General Description of the Invention".)

Claim 1 further recites extracting claim dependency (page 19, lines 1-6) and text of claims from the interchanged claim section (page 21, lines 25-27) and converting the extracted claim dependency into a graphical form (page 15, lines 31-33; page 16, lines 1-3; page 26, lines 26-31) and textual form (page 26, lines 26-31), forming a derivative claim section (Fig. 1, module 26; page 16, lines 10-13; page 22, lines 4-6) and forming the derivative patent document (page 16, lines 14-17; page 22, lines 17-21; Fig. 1, module 28).

Claim 12 recites a derivative patent document comprising a transformed claim section (page 26, lines 9-20) and executable computer program code (page 27, lines 17-24) for interactive displaying of the transformed claim section. The transformed claim section is the claim section of the original patent document that has been processed according to the method of the present invention (page 16, lines 3-10). The processing comprises transforming multiple dependent claims into single dependent claims (Fig. 2, box 118; page 17, lines 28-31), sorting the transformed claims by claim numbers to which the claims refer to (page 19, line 31), and interchanging positions of any two neighboring sorted claims that meet the eligibility criteria for said interchanging of positions (page 20, lines 1-13). The text of computer program, e.g. written in Javascript, is further added to the derivative patent document to provide an interactive displaying of the transformed, sorted and interchanged claims of the claim section or any part thereof (page 27, lines 15-26, page 23, lines 18-30). Reference to the computer program can be embedded into the patent document, or the program source code can be embedded directly into the patent document (page 27, line 19-22).

Claim 15 recites a method of computerized generation of a derivative claim section from a patent document. The method is based on selecting a claim section of the patent document (Fig. 1, segment retrieval module 14; page 15, lines 23-28) and processing the claim section of the patent document. The processing comprises transforming multiple dependent claims into single dependent claims (Fig. 2, box 118; page 17, lines 28-31), sorting the transformed claims by claim numbers to which the claims refer to (page 19, line 31), and interchanging positions of any two neighboring sorted claims that meet the eligibility criteria for said interchanging of positions (page 20, lines 1-13). It further recites extracting claim dependency (page 19, lines 1-6) and text of claims from the interchanged claim section (page 21, lines 25-27) and converting the extracted claim dependency into a graphical form (page 15, lines 31-33; page 16, lines 1-3; page 26, lines 26-31) and textual form (page 26, lines 26-31), forming a derivative claim section (Fig. 1, module 26; page 16, lines 10-13; page 22, lines 4-6) and forming the derivative patent document (page 16, lines 14-17; page 22, lines 17-21; Fig. 1, module 28). The derivative patent document is associated with a computer program code (page 27, lines 17-24) providing a user interactive selection of a subset of elements in one of the graphical and textual forms (page 23, lines 18-30; page 24, lines 25-30; page 25, lines 3-28). Said subset is displayed in the selected form along

with the related subset of elements according to the transformed claim dependency in the other form to a user (page 25, lines 24-28), the elements in the graphical form are displayed in the order obtained after the step of (iii) of interchanging.

Claim 24 is similar to claim 12, but recites a derivative claim section of a patent document instead of the derivative patent document itself.

Claim 25 recites a computerized system for generating a derivative document from a patent document. The system comprises means for selecting a claim section of the patent document (Fig. 1, segment retrieval module 14) and means for processing the claim section (Fig. 1, modules 18, 20). The means for processing comprises means for transforming multiple dependent claims into single dependent claims (Fig 1, modules 18, 20 performing step 118 of Fig. 2), means for sorting the transformed claims by claim numbers to which the claims refer (Fig 1, modules 18, 20 performing steps described on page 19, line 31), and means for interchanging positions of any two neighboring sorted claims (Fig 1, modules 18, 20 performing steps described on page 20, lines 1-13). The system further comprises means for adding a new section to the patent document or to a part thereof to form the derivative document (Fig. 1, module 28, see also page 22, lines 17-21). The new section comprises a computer program code for interactive displaying the transformed sorted and interchanged claim section or any part thereof (page 22, lines 17-23; page 23, lines 18-30; page 27, lines 17-24).

Claim 51 recites a computerized system for generating a derivative claim section of a patent document. The system comprises means for processing the claim section of the patent document (Fig. 1, modules 18, 20). The means for processing comprises means for transforming multiple dependent claims into single dependent claims (Fig 1, modules 18, 20 performing step 118 of Fig. 2), means for sorting the transformed claims by claim numbers to which the claims refer (Fig 1, modules 18, 20 performing steps described on page 19, line 31), and means for interchanging positions of any two neighboring sorted claims (Fig 1, modules 18, 20 performing steps described on page 20, lines 1-13). The system further comprises means for extracting claim dependency (Fig. 1 module 20, see also page 19, lines 1-6) and text of claims from the interchanged claims (Fig. 1, module 22, see also page 21, lines 25-27), means for converting the

extracted claim dependency into a graphical form (Fig. 1, module 20, see also page 15, lines 31-33; page 16, lines 1-3; page 26, lines 26-31), means for converting the extracted text of claims into a textual form (Fig. 1 module 22, see also page 26, lines 26-31), means for forming a derivative claim section by combining the converted graphical and textual elements of the converted claim dependency and text of claims in the order obtained after the step (iii) of interchanging (Fig. 1, module 26; page 16, lines 10-13; page 22, lines 4-6). The new section is associated with a computer program code (page 27, lines 17-24) for a user interactive selection of a subset of elements in one of the graphical and textual forms (page 23, lines 18-30; page 24, lines 25-30; page 25, lines 3-28) and further displaying said subset in the selected form along with the related subset of elements according to the transformed claim dependency in the other form to a user (page 25, lines 24-28).

Claim 47 recites the derivative document of claim 12 that is presented in a web compatible form to be recognized by a browser (e.g. in HTML format, see page 27, lines 4-7).

Claim 53 recites the step (c) of claim 1 of forming a respective triplet for each interchanged claim, the triplet comprising first, second and third elements being respectively a claim number, a vertical offset, characterizing a vertical position of the claim, and a horizontal offset, characterizing a horizontal position of the claim (page 21, lines 17-22).

Claim 54 recites the step (d) of claim 53 (which, in turn, refers to claim 1) of converting triplets into respective graphical elements, which are arranged into a substantially linear tree, wherein vertical and horizontal positions of the graphical elements in the tree are defined by the vertical and horizontal offsets in the respective triplets (page 21, lines 23-25; page 22, lines 1-12).

Claim 55 recites the step (c) of claim 54 (which, in turn, refers to claim 1) of forming a respective quadruplet for each interchanged claim, the quadruplet comprising the respective triplet and a fourth element, which is a text of the claim (page 21, lines 28-33 and page 22, lines 1-3).

Claim 56 recites the step (f) of claim 55 (which, in turn, refers to claim 1) of simultaneous

displaying a subset of graphical elements from said substantially linear tree along with the related subset of fourth elements from the quadruplets (page 22, lines 17-23; page 23, lines 18-30; page 27, lines 17-24).

VI. Issues (Grounds of rejections to be reviewed on appeal)

The issue in this appeal is as follows:

The examiner states, and the applicant disagrees, that:

(1) Rivette (US 6,339,767) anticipates independent claims 1, 12, 15, 24, 25 and 51 of the present invention (in particular, that Rivette teaches steps (ii) and (iii) of independent claims 1, 12, 15, 14, 25 and 51 of the present invention);

(2) claims 53-56 are obvious in view of Rivette; and

(3) claims 12, 24 and 47 are not patentable subject matter.

VII. Arguments

(A) Extract from the Applicant's Response to Final Action

(Applicant's arguments with respect to independent claims 1, 12, 15, 24, 25 and 51)

RE: Claim Rejections under 35 USC §102(e)

The examiner has rejected independent claims 1, 12, 15, 24, 25 and 51 under 35 USC §102(e) as anticipated by Rivette. The examiner's rejections with regard to claim 1 have been respectfully traversed for the following reasons. Same arguments apply to other independent claims 12, 15, 24, 25 and 51.

The Examiner's attention has been drawn to claim 1 in this application, and in particular to the

step:

"... (b) processing the claim section, including:

(i) transforming multiple dependent claims into single dependent claims;

(ii) sorting the transformed claims by claim numbers to which the claims refer to;

(iii) interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and succeeding claim does not refer to the preceding claim; ..."

As explained in the Applicant's response dated October 25, 2005, during telephone interview with examiners Nathan Hillery and Doug Hutton on December 01, 2005, and in the Applicant's response to the Final Office Action dated February 28, 2006, the steps of claim 1, including the steps (ii) and (iii), form a particularly simple and efficient method, which minimizes the processing time and guarantees the correct results for transforming, sorting, and interchanging claims in preparation for displaying.

In particular, the Applicant has proved a Theorem described in paragraphs [55-57] of the detailed description, on which the method of claim 1, including the steps (ii) and (iii), relies, in order to ensure that the steps of the method of claim 1 preserve the original claim dependency.

Contrary to the examiner's statement in sections 16 and 28 of the examination report dated January 12, 2006, the Applicant states that the above noted steps (ii) and (iii) are not present in Rivette neither expressly nor inherently.

Accordingly, Rivette does not teach each and every element of claim 1 (or claims 15, 25, 51) of the present invention. Therefore the rejection of claims under 35 USC §102(e) as anticipated by Rivette is requested to be withdrawn, in accordance with e.g. court decision *Verdegaal Bros. v. Union Oil Co. of California*, 814, F.2d 628, 631, 2 USPQ2d 1051, 1052 (Fed. Cir. 1987).

RE: Claim Rejections under 35 USC §103(a)

The examiner has rejected claims 53-56 under 35USC §103(a) as obvious in view of Rivette (US 6,339,767).

Claims 53-56 depend on claim 1 and include all limitations of claim 1, which is neither anticipated (see arguments presented above and below in response to the advisory action) nor is obvious in view of Rivette for the following reasons.

In order to lead to claim 1 of the current invention, Rivette would need to perform the following additional steps, namely:

1. (ii) to sort the transformed claims by claim numbers to which the claims refer to;
2. (iii) to interchange positions of any two neighboring sorted claims, the preceding claim and the succeeding claim,
3. then to impose further limitations to the interchanging step (iii), namely to identify that:
both claims, whose positions to be interchanged, have to be dependent claims and refer to different claims;
4. and then to impose yet another limitation that:
succeeding claim does not refer to the preceding claim; ..."

Clearly, the above noted combination of steps 1-4 cannot be considered obvious.

In addition, someone skilled in the art would have to prove a Theorem, on which the method of the current invention relies (see paragraphs [55-57] of the specification) to ensure that the method steps work properly. Indeed, the method of computerized processing, which would require the proof of the corresponding Theorem, cannot be considered obvious.

There is also no motivation or suggestion in Rivette to perform the above noted processing steps.

The law is well established that the impetus for combining or modifying references must be found in the references themselves, not in the pending application, see e.g. Orthopedic Equip.

Co. v. United States, 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983), and a recent case Teleflex v. KSR International, where Federal Circuit set forth an elevated standard for finding a motivation to combine or modify references (namely, a motivation to combine prior art reference "in the particular manner claimed" in a patent).

Claims 53-56 add further limitations to claim 1 of forming triplets and quadruplets including three and four elements respectively for each claim, to simplify and accelerate the visualization of claim structure on a display screen.

Triplets and quadruplets are not present, and are neither suggested nor can be reasonable derived from Rivette.

Therefore claims 53-56 cannot be obvious in view of Rivette.

Accordingly, the Examiner's rejections of claims 53-56 under 35 USC §103(a) are requested to be withdrawn.

RE: Claim Rejections under 35 USC §101

Claims 12, 24 and 47 were rejected by the examiner as non-patentable subject matter.

Claim 12 describes a derivative paper or electronic patent document, having a claim section that has been transformed according to the method of the present invention, with a text of computer program code being added to the patent document, e.g. Javascript, to form a part of the patent document (or a reference to a file where a computer program code resides being added to the patent document).

The support of claim 12 can be found on page 27, lines 15-26 of the specification.

Contrary to the examiner's statement during the telephone interview with the Applicant that electronic documents do not constitute a patentable subject matter in the USPTO, an electronic document itself seems to be patentable, which is supported by numerous examples of the

recently issued patents, see e.g. US 6,701,023 (claim 30), US 6,661,919 (claim 1), 7,069,443 (claim 12), all of which are claiming an electronic document *per se*. Electronic documents are also not prohibited from being patented by MPEP.

Claim 24 is similar to claim 12 and describes a derivative claim section of a patent document with a text of computer program code being added to the claim section.

Claim 47 refers to claim 12 and recites the derivative patent document that is presented in a web compatible format, e.g. html.

If any language of claims 12, 24 or 47 is not clear, the Applicant is willing to make further amendments to these claims to make these claims allowable.

(B) Response to Advisory Action

In the Advisory Action, the examiner replied that the Patent Office contends that Rivette teaches limitations of steps (ii) and (iii) of claims 1, 12, 15, 24, 25 or 51.

1. Regarding step (ii) of claim 1:

"(ii) sorting the transformed claims by claim numbers to which the claims refer to;..."

The Examiner has stated the following:

" Specifically, Rivette et al. teach that These hyperbolic browser implementations conceptually map non-root nodes in the DAG that have multiple parent nodes to multiple nodes in the hyperbolic tree, wherein each of these nodes are linked to a single parent node in the hyperbolic tree, ..., which is equivalent to sorting. Further, Rivette et al illustrates in Figs 181 and 183 that the claims are sorted by claim number within the broadest, reasonable interpretation of "sort" " (underlining made by the Applicant).

The Applicant strongly disagrees with this statement for the following reasons.

In the examination report, the examiner talks about Rivette sorting by claim numbers, but claim

1 of the present invention requires sorting of claims by a different number, namely "(ii) sorting the transformed claims by claim numbers to which the claims refer to", which is clearly not the same. As a result, the examiner has refuted the statement, which is not present in claim 1, i.e. the examiner has changed claim 1 of the present invention while examining it, which is not permissible.

More details are provided below.

1. There is no indication that Rivette performs sorting of any kind. In particular, contrary to the examiner's statement, Fig. 181 and Fig. 183 of Rivette, do not show claims "... sorted by claim number within the broadest reasonable interpretation of sort". Moreover, Figs. 181 and 183 of Rivette do not show any claims whatsoever, whether sorted or not.

According to Rivette, Fig. 181 illustrates a citation analysis graph (see Brief Description of the Figures, col. 8, lines 61-62), and Fig 183 illustrates an example tree corresponding to the citation analysis graph of Fig. 181 (col. 8, lines 65-66).

Clearly, the citation analysis graph and tree have nothing to do with claims of a patent document.

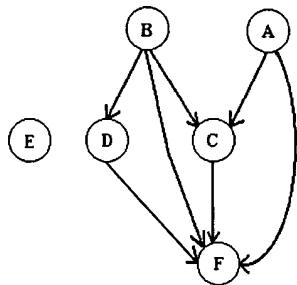
Instead, the attention of the Appeal Board is drawn to Fig. 171 of Rivette, which illustrates an example patent claims tree, and which clearly shows that claims shown in Fig. 171 are not sorted. This proves that Rivette does not perform claim sorting.

Even if the citation analysis graph and tree of Fig. 181 and Fig 183 were related to claims of a patent document, they would not show claims sorted "by claim number within the broadest reasonable interpretation of sort" for the following reason.

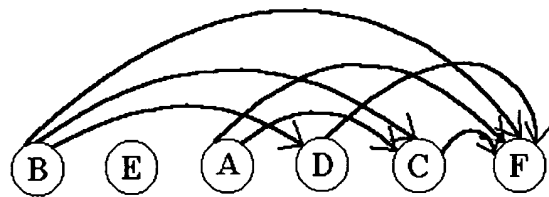
It is known by those of ordinary skill in the art that the only "reasonable interpretation of sort" that can be performed on a DAG is a well known topological sorting. For convenience of the Appeal Board, a definition of topological sorting is reproduced below together with the accompanying illustration:

McGill University: School of Computer Science, Winter 1997 Class Notes for 308-251, DATA STRUCTURES AND ALGORITHMS Topic #30: DIRECTED ACYCLIC GRAPHS, <http://www.cs.mcgill.ca/~cs251/OldCourses/1997/topic30/>:

“**Topological sort** is an ordering of vertices in a **DAG** such that, if there is path from node **u** to node **v**, then **v** appears after **u** in the ordering. Therefore, a cyclic graph cannot have a topological order. A **topological sort** of a graph can be viewed as an ordering of its vertices along a horizontal line so that all directed edges go in one direction.”

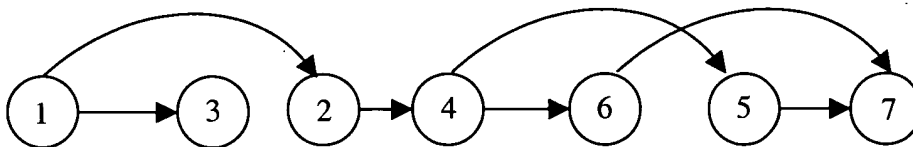


Original DAG



Topologically Sorted DAG

If the DAG of Fig.181 of Rivette were topologically sorted, it would look as follows:



Please note that nodes of the topologically sorted DAG are ordered along a horizontal line so that all directed edges go in one direction, as required by the definition of topological sorting.

Clearly, the topologically sorted DAG shown above is different from the DAG of Fig. 181 of Rivette, which proves that, contrary to the examiner's statement, the DAG of Fig. 181 of Rivette

is not sorted.

Similar considerations apply to Fig. 183 of Rivette, proving that, contrary to the examiner's statement, the tree shown in Fig. 183 of Rivette is not sorted.

In combination, the above arguments clearly show that step (ii) of claim 1 of the present invention is not taught by Rivette.

2. In the above cited statement from the Advisory action, the examiner has given his own definition of sorting that involves “... map ... nodes in the DAG ... to ... nodes in the hyperbolic tree, ... is equivalent to sorting..” (the definition has been shortened by the Applicant to reduce to its essentials, but a full definition cited above in the examiner's statement has the same meaning).

This examiner's definition has not been proved to be correct and recognized by the scientific community. Clearly, the examiner's definition of sorting does not possess established scientific merits, and therefore cannot be applied to the applicant's invention (or for that matter to any other invention).

The examiner is challenged to provide a proof that the examiner's definition of sorting has scientific merits and is equivalent to topological sorting, and to prove that Rivette teaches this sorting.

3. The procedure, equated by the examiner to a sorting procedure and asserted to be performed in this capacity by Rivette, involves “map ... nodes in the DAG ... to ... nodes in the hyperbolic tree”.

The attention of the Appeal Board is drawn to Fig. 179 of Rivette, wherein Rivette illustrates mapping of a graph to a tree. By mapping a graph to a tree, Rivette does not do sorting, instead Rivette provides removal of multiple dependencies in DAG (see Rivette col. 124, lines 17-34).

In contrast, in the step (ii) of claim 1 of the present invention, the applicant performs a numerical sorting on a list of pairs of numbers by the second number in the pair. This means that even if such "equated sorting procedure" suggested by the examiner were performed by Rivette, it would be different from the step (ii) of claim 1 of the present invention, because it would be performed on a different data structure, which is not present in the applicant's invention.

Accordingly, the Examiner's statement that Rivette teaches the step (ii) of the present invention is incorrect, and therefore is not applicable to the present invention.

2. Regarding step (iii) of claim 1:

(iii) interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and
succeeding claim does not refer to the preceding claim; ..."

In the Advisory action, the examiner states that claim scope of claim 1 is not limited by claim language of step (iii), because this step includes the word "if", which suggests or makes this step optional, i.e. not required to be performed (MPEP 2111.04 and MPEP 2106 III C).

The Applicant disagrees with this statement of the examiner for the following reasons.

The MPEP says that "The determination of whether each of these clauses ((A) "*adapted to*" or "*adapted for*" clauses; (B) "*wherein*" clauses; and (C) "*whereby*" clauses) is a limitation in a claim depends on the specific facts of the case (the "italic" and "bold" being added by the Applicant).

The presence of word "if" in the step (iii) of claim 1 defines a condition, or a requirement for including a claim into a sub-set of claims, which are processed differently from the rest of the claims. This means that the condition of step (iii) is a limitation in claim 1, which is material to the present invention.

In more detail, as explained in section V. Summary of Claimed Subject Matter above, there are no requirements imposed on the arrangement of claims by claim numbers to which said claims refer. They can be arranged arbitrarily depending on claim complexity, the logic behind claims design, and just plain chance. Such arbitrary arrangement does not allow representing the claim dependency graphically in a way beneficial to a user, since closely related claims can be situated far apart from each other and separated by other claims. However, for claim dependency to be easily comprehended, dependent claims must be placed as close as possible to the claims they refer. To bring claims into such arrangement, a quick processing of claims comprising the steps ii) and iii) of claim 1 has been invented by the Applicant. The step ii) provides for the unified arrangement of claims by the claim number to which the claims refer, which is required for the next step iii). The step iii) removes claims that separate those claims that should be placed together. It must be noted that the required arrangement of claims cannot be achieved by neither step ii), nor step iii) alone. Only their combination provides for the intended functionality. Excluding the step iii), as suggested by the examiner, would destroy the utility of the invention. For this reason, the step iii) is material to the present invention.

The attention of the Appeal Board is drawn to the fact that part of step (iii) **is always performed**, i.e. the verification that "both claims are dependent claims and refer to different claims; and succeeding claim does not refer to the preceding claim" **is always performed**, regardless of interchanging positions of two neighboring claims.

Therefore the step (iii) cannot be considered optional and cannot be ignored **without destroying the intended functionality of claim 1**, which is in compliance with recent case law *Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005), where the court held that when a " 'whereby' clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention."

Accordingly, the Examiner's statement that claim scope of claim 1 is not limited by claim language of step (iii) of the present invention **is incorrect**, and therefore is **not applicable** to the present invention.

3. Finally, when evaluating the scope of a claim, every limitation in the claim must be considered (MPEP 2106 II C, page 2100-9): "Office personnel may not dissect a claimed invention into discrete elements and then evaluate the elements in isolation. Instead, the claim as a whole must be considered, see e.g. *Diamond v. Diehr*, 450 U.S. at 188-89, 209 USPQ at 9."

Accordingly, the Applicant requests to consider all steps of claim 1, including steps (i)-(iii) together, instead of dissecting claim 1 into discrete steps as it has been done by the examiner (as in combination, steps (i)-(iii) form a simple and efficient computerized method of processing a claim section of a patent document, which is unique and not taught by any existing prior art).

Authorities supporting the Applicant's position

The applicant relies upon the decisions *Verdegaal Bros. v. Union Oil Co. of California*, 814, F.2d 628, 631, 2 USPQ2d 1051, 1052 (Fed. Cir. 1987), *Orthopedic Equip. Co. v. United States*, 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983), *Teleflex v. KSR International*, *Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005), and *Diamond v. Diehr*, 450 U.S. at 188-89, 209 USPQ at 9 as described above.

It is submitted that, on a proper application of the principles set out in these decisions to the present situation, claims 1, 12, 15, 24, 25 and 51 are not anticipated by Rivette, and claims 53-56 are not obvious in view of Rivette.

Conclusion

In conclusion, the applicant respectfully submits that the Examiner's rejections of independent claims 1, 12, 15, 24, 25 and 51 and dependent claims 47, 53-56 are unjustified and improper.

It is therefore respectfully requested that these rejections be over-ruled and that this application be allowed.

Yours truly,
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By  _____

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Appendix

A copy of claims 1, 2, 5, 7-16, 19, 21-27, 37-40, 43, 46, 47 and 51-56 in this appeal follows.

1. (Previously presented) A method of computerized generation of a derivative value enhanced document from a patent document, comprising the steps of:

(a) selecting a claim section of the patent document;

(b) processing the claim section, including:

(i) transforming multiple dependent claims into single dependent claims;

(ii) sorting the transformed claims by claim numbers to which the claims refer to;

(iii) interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and

succeeding claim does not refer to the preceding claim;

(c) extracting claim dependency and text of claims from the interchanged claim section;

d) converting the extracted claim dependency into a graphical form, comprising a set of graphical elements, each element corresponding to an individual claim or a group of claims;

(e) converting the extracted text of claims into a textual form, comprising a set of elements, each element being a text of an individual claim or a text of a group of claims;

(f) forming a derivative claim section by combining the converted graphical and textual elements of the converted claim dependency and text of claims in the order obtained after the step (iii) of interchanging; and

(g) forming the derivative document by combining the derivative claim section with the patent document or a part of the patent document.

2. (Previously presented) A method as described in claim 1, wherein the steps of converting further comprise establishing links between the elements of the graphical and textual subsets according to the transformed claim dependency.

3. (Canceled)

4. (Canceled)

5. (Previously presented) A method as described in claim 1, further comprising one or more of the following:

displaying the selected subsets of elements on a computer screen; and

displaying the selected subsets of elements on a computer screen in combination with other elements of the sets.

6. (Canceled)

7. (Previously presented) A method as described in claim 1, wherein the step (e) comprises converting into the form selected from the list consisting of ASCII, HTML, SGML, XHTML, and XML formats.

8. (Previously presented) A method as described in claim 1, wherein the step (g) comprises a step selected from the list consisting of:

forming the document so that the derivative claim section is replacing the claim section of the patent document;

forming the document so that the derivative claim section is supplementing the patent document;

forming the document so that the derivative claim section is supplemented by a part of the patent document; and

forming the document so that the derivative document is the derivative claim section of the patent document.

9. (Original) A method as described in claim 1, further comprising a step of performing one or more of the following:

storing data obtained in at least one of the steps in a database;

sending data obtained in at least one of the steps over a network;

compressing data obtained in at least one of the steps;

displaying one of the derivative document and the derivative segment on a computer screen.

10. (Previously presented) A method as described in claim 1, wherein the step (b) comprises distributed processing of the patent document in a network environment performed by

using processing power of more than one computer.

11. (Original) A method as described in claim 10, wherein the step of distributed processing comprises the steps of initial processing of the document performed on a server side and final processing performed on a client side.

12. (Previously presented) A derivative patent document, comprising:

(i) a transformed claim section, in which multiple dependent claims are transformed into single dependent claims, said transformed claims are sorted by claim numbers to which the claims refer to, and the positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, are interchanged if they meet the following requirements:

both claims are dependent claims and refer to different claims; and
succeeding claim does not refer to the preceding claim;
and

(ii) an executable computer program code for interactive displaying the transformed, sorted and interchanged claims of the claim section or any part thereof, or a reference to a file where the computer program code resides, the computer program code being executable in response to an event.

13. (Previously presented) A method of computerized generation of a database stored in a memory, comprising the steps of:

(a) providing a patent document;
(b) performing the steps of the method as described in claim 1; and
(c) storing data obtained in at least one of the steps of the step (b) in a database stored in the memory.

14. (Previously presented) A database stored in a memory and obtained according to the method as described in claim 13.

15. (Previously presented) A method of computerized generation of a derivative claim section from a patent document, comprising the steps of:

(a) selecting a claim section of the patent document;
(b) processing the claim section, including:
(i) transforming multiple dependent claims into single dependent claims;

(ii) sorting the transformed claims by claim numbers to which the claims refer to;
(iii) interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and
succeeding claim does not refer to the preceding claim;

(c) extracting claim dependency and text of claims from the interchanged claim section;

(d) converting the extracted claim dependency into a graphical form, comprising a set of graphical elements, each element corresponding to an individual claim or a group of claims;

(e) converting the extracted text of claims into a textual form, comprising a set of elements, each element being a text of an individual claim or a text of a group of claims; and

(f) forming a derivative claim section by combining the converted graphical and textual elements of the converted claim dependency and text of claims in the order obtained after the step (iii) of interchanging, and associating thereof with a computer program code providing a user interactive selection of a subset of elements in one of the graphical and textual forms, and displaying said subset in the selected form along with the related subset of elements according to the transformed claim dependency in the other form to a user, the elements in the graphical form being displayed in the order obtained after the step (iii) of interchanging.

16. (Previously presented) A method as described in claim 15, wherein the steps of converting further comprise establishing links between the elements of the graphical and textual subsets according to the transformed claim dependency.

17. (Canceled)

18. (Canceled)

19. (Previously presented) A method as described in claim 16, further comprising one or more of the following:

displaying the selected subsets of elements on a computer screen; and

displaying the selected subsets of elements on a computer screen in combination with other elements.

20. (Canceled)

21. (Previously presented) A method as described in claim 15, wherein the step (e) comprises converting into the form selected from the list consisting of ASCII, HTML, SGML, XHTML and XML formats.

22. (Previously presented) A method as described in claim 15, wherein the step (b) comprises distributed processing of the claim section in a network environment performed by using processing power of two or more computers.

23. (Previously presented) A method as described in claim 22, wherein the step of distributed processing comprises the steps of initial processing of the claim section performed on a server side and final processing of the claim section performed on a client side.

24. (Previously presented) A derivative claim section of a patent document, comprising:

(i) a transformed claim section, in which multiple dependent claims are transformed into single dependent claims, said transformed claims are sorted by claim numbers to which the claims refer to, and the positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, are interchanged if they meet the following requirements:

both claims are dependent claims and refer to different claims; and

succeeding claim does not refer to the preceding claim;

and

(ii) an executable computer program code for interactive displaying the transformed, sorted and interchanged claims of the claim section or any part thereof, or a reference to a file where the computer program code resides, the computer program code being executable in response to an event.

25. (Previously presented) A computerized system for generating a derivative document from a patent document, comprising a computer having a memory, said memory comprising:

(a) means for selecting a claim section of the patent document;

(b) means for processing the claim section, including:

(i) means for transforming multiple dependent claims into single dependent

claims;

(ii) means for sorting the transformed claims by claim numbers to which the claims refer to;

(iii) means for interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and

succeeding claim does not refer to the preceding claim; and

(c) means for adding a new section to the patent document or to a part thereof to form the derivative document, the new section comprising a computer program code for interactive displaying the transformed sorted and interchanged claim section or any part thereof, or a reference to a file where the computer program code resides, the computer program code being executable in response to an event.

26. (Original) A computerized system as described in claim 25, further comprising means for sending the derivative document over a network.

27. (Previously presented) A computerized system as described in claim 25, wherein the means (b) comprises means for distributed processing of the document in a network, wherein processing power of two or more computers is used.

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Previously presented) A method as described in claim 1, wherein the step of selection of the subset of elements comprises the step selected from the list consisting of:

selecting the subset comprising only one element in one form, and displaying the selected subset in said one form with the related subset comprising the corresponding element of the other form;

selecting the subset comprising only one element in one form, and displaying the selected subset in said one form along with the related subset in the other form comprising first and second elements, wherein the first element corresponds to the selected element of the first form, and the second element is the element on which the first element refers to according to claim dependency;

selecting the subset comprising elements of one form corresponding to independent claims only, and displaying the selected subset in said one form along with the related subset in the other form comprising elements of the other form corresponding to the selected elements of said one form;

selecting the subset comprising elements in one form corresponding to an independent claim and all the dependent claims referred thereto only, and displaying the selected subset in said one form along with the related subset comprising elements in the other form corresponding to the selected elements in said one form; and

selecting the first subset comprising an independent claim only in one form, and displaying the selected subset in said one form along with the related subset comprising elements in the other form corresponding to the selected independent claim and all dependent claims referred thereto.

38. (Previously presented) A method as described in claim 37, further comprising one or more of the following:

displaying the selected subsets of elements on a computer screen; and

displaying the selected subsets of elements on a computer screen in combination with other elements of the sets.

39. (Previously presented) A computer program product for generating a derivative document from a patent document, comprising a computer usable medium having computer readable program code means embodied in said medium for causing said computer to perform the steps of the method as described in claim 1.

40. (Previously presented) A computer program product for generating a derivative claim section of a patent document, comprising a computer usable medium having computer readable program code means embodied in said medium for causing said computer to perform the steps of the method as described in claim 15.

41. (Canceled)

42. (Canceled)

43. (Previously presented) A method as described in claim 1, wherein the step (i) further comprises one of the following:

adding single dependent claims generated from multiple dependent claims to the end of original set of claims; or

inserting claims generated from a multiple dependent claim into original set of claims immediately after the multiple dependent claim, followed by re-numbering of claims starting from the multiple dependent claim and to the end of claim section.

44. (Canceled)

45. (Canceled)

46. (Previously presented) A computer database stored in a memory, the database storing derivative patent documents of claim 12.

47. (Previously presented) A derivative patent document as described in claim 12, the derivative patent document being presented in a web compatible form such that to be recognized by a browser.

48. (Canceled)

49. (Canceled)

50. (Canceled)

51. (Previously presented) A computerized system for generating a derivative claim section of a patent document, the system comprising a computer having a memory, said memory comprising:

(a) means for processing the claim section, including:

(i) means for transforming multiple dependent claims into single dependent

claims;

(ii) means for sorting the transformed claims by claim numbers to which the claims refer to;

(iii) means for interchanging positions of any two neighboring sorted claims, the preceding claim and the succeeding claim, if they meet the following requirements:

both claims are dependent claims and refer to different claims; and

succeeding claim does not refer to the preceding claim; and

(b) means for extracting claim dependency and text of claims from the interchanged claims;

(c) means for converting the extracted claim dependency into a graphical form, comprising a set of graphical elements, each element corresponding to an individual claim or a group of claims;

(d) means for converting the extracted text of claims into a textual form, comprising a set of elements, each element being a text of an individual claim or a text of a group of claims; and

(e) means for forming a derivative claim section by combining the converted graphical and textual elements of the converted claim dependency and text of claims in the order obtained after the step (iii) of interchanging, and associating thereof with a computer program code providing a user interactive selection of a subset of elements in one of the graphical and textual forms, and displaying said subset in the selected form along with the related subset of elements according to the transformed claim dependency in the other form to a user, the elements in the graphical form being displayed in the order obtained after the step (iii) of interchanging.

52. (Previously presented) A method as described in claim 1, wherein the step (f) further comprises associating the derivative claim section with a computer program code providing a user interactive selection of a subset of elements in one of the graphical and textual forms, and displaying said subset in the selected form along with the related subset of elements according to the transformed claim dependency in the other form to a user, the elements in the graphical form being displayed in the order obtained after the step (iii) of interchanging.

53. (Previously presented) A method as described in claim 1, wherein the step (c) of extracting claim dependency comprises forming a respective triplet for each interchanged claim, the triplet comprising first, second and third elements which are respectively as follows:

a claim number;

a vertical offset, characterizing a vertical position of the claim, which is defined by the relative position of the claim compared to the first claim in the interchanged set of claims;

a horizontal offset, characterizing a horizontal position of the claim, which is defined by the level of claim dependency for the claim.

54. (Previously presented) A method as described in claim 53, wherein the step (d) of converting comprises converting said triplets into respective graphical elements which are arranged into a substantially linear tree, wherein vertical and horizontal positions of the graphical elements in the tree are defined by the vertical and horizontal offsets in the respective triplets.

55. (Previously presented) A method as described in claim 54, wherein the step (c) further comprises forming a corresponding quadruplet for each interchanged claim, the quadruplet comprising the respective triplet and a fourth element, which is a text of the claim.

56. (Previously presented) A method as described in claim 55, wherein the step (f) comprises a simultaneous displaying a subset of graphical elements from said substantially linear tree along with the related subset of fourth elements from the quadruplets.